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TI 2-Pyrrolidones

IN Takeuchi, Yoshihiko; Fujita, Yutaka; Naruchi, Tatsuyuki; Yoshisato, Eishin

PA Teijin Ltd.

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AB  $\gamma$ -Butyrolactone (I) was treated with  $\text{RNH}_2$  ( $\text{R} = \text{H}$  or  $\text{C}_1\text{-4 alkyl}$ ) and  $\text{H}_2$  (or optionally with steam) in the gas phase in the presence of a catalyst composed of  $\text{Cu}$  and a metal oxide ( $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2\text{-Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{ZrO}_2$ , or  $\text{Cr}_2\text{O}_3$ ). Thus, a catalyst composed of  $\text{CuO}$ ,  $\text{CoO}$ , and  $\text{TiO}_2$  (atomic ratio of  $(\text{Cu} + \text{Co}):\text{Ti} = 43:100$  and that of  $\text{Co}:\text{Cu} = 1:10$ ) was prepd. from  $\text{Na}_2\text{CO}_3$ ,  $\text{TiO}_2$ ,  $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$ , and  $\text{Co}(\text{NO}_3)_2$  by mixing them in  $\text{H}_2\text{O}$  followed by drying and heating at  $300\text{-}350^\circ\text{C}$ . A mixt. of  $0.04 \text{ g/min I}$ ,  $0.04 \text{ l./min NH}_3$ , and  $0.23 \text{ l./min H}_2$  was passed over the catalyst kept at  $270^\circ\text{C}$ . for 3 hr to give  $2.82 \text{ g 2-pyrrolidinone}$   $1.57 \text{ g } \gamma\text{-hydroxybutyramide}$  and  $0.36 \text{ g unreacted I}$ . Similarly prepd. were  $\text{N-methyl-}$  and  $\text{N-propyl-2-pyrrolidinone}$ .

DT Patent

LA Japanese